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Claim Listing

Claims 1 to 75 were cancelled in the first preliminary amendment, filed with the application, at the same time as which claims 76 to 103 were added. In the Second Preliminary Amendment (not entered) and the Third Preliminary Amendment (entered 6/10/2004), claims 81-83, 87 and 93 were amended. Applicant also mistakenly applied the designation of "currently amended" to claims 109-111, and mistakenly applied the designation "previously presented" to claims 104-108 and 112, 113, when all these claims should have been labeled "Newly Added." Please consider the prior claims listing to read as such.

The claims below replace all pending claims in the application. In this claim listing, claims 93 - 113 have been cancelled, and new claims 114-142 have been added.

1-75 (cancelled)

76. (previously presented) An array of several different particle-attached ligands, wherein different ligands are attached to different particles and said particles have a chemical or physical characteristic that permits identification of the ligand or ligands attached thereto, and wherein said particles are in a planar defined area on the surface of a substrate and wherein said particles are affixed to said substrate.

77. (previously presented) The array of claim 76 wherein the particles are affixed to the surface of the substrate.

78. (previously presented) The array of claim 76 wherein the ligands are proteins.

79. (previously presented) The array of claim 76 wherein the ligands are nucleic acids.

80. (previously presented) The array of claim 76 wherein, within the planar configuration, the particles are randomly positioned.

81. (previously presented) An array of proteins according to claim 78, wherein different proteins bind to different cell types.

82. (previously presented) The array of proteins according to claim 78, wherein the proteins are monoclonal antibodies.

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83. (previously presented) An array of oligonucleotides according to claim 79 wherein the nucleic acids are DNA or RNA.

84. (previously presented) The array according to claim 76, wherein the substrate is a semiconductor.

85. (previously presented) The array of according to claim 84 wherein the substrate is an electrode.

86. (previously presented) The array according to claim 76, wherein the chemical or physical characteristic is a chemical tag.

87. (previously presented) The array according to claim 86, wherein the chemical tag ~~optically~~ can be optically detected.

88. (previously presented) The array according to claim 77, wherein the particles are affixed to the substrate by chemical bonding.

89. (previously presented) The array according to claim 76, wherein the particles are exposed to liquid containing or suspected of containing an analyte.

90. (previously presented) The array according to claim 89, wherein the ligands are nucleic acids capable of hybridizing with one or more analytes contained within the liquid.

91. (previously presented) An article of manufacture comprising two or more of any of the arrays defined in claim 76 to 90.

92. (previously presented) The article of claim 91 wherein the location of each array on said substrate in combination with the chemical or physical characteristic indicates the types of ligands therein.

93 – 113 (cancelled)

114. (Newly Added) A bead array comprising a planar, random assembly of encoded, oligonucleotide-bearing beads in a designated area on a substrate, wherein said encoded beads comprise a plurality of unique capture oligonucleotides and have a diameter of from 2 microns to 20 microns.

115. (Newly Added) A bead array comprising a planar, random assembly of encoded, oligonucleotide-bearing beads in a designated area on a substrate, wherein said encoded

beads comprise a plurality of unique capture oligonucleotides and have a diameter of up to 10 microns.

116. (Newly Added) A bead array comprising a planar, random assembly of encoded, oligonucleotide-bearing beads in a designated area on a substrate, wherein said encoded beads comprise a plurality of unique capture oligonucleotides and have a diameter of about 1 micron.

117. (Newly Added) A bead array comprising a planar assembly of encoded, oligonucleotide-bearing beads, wherein said beads (a) are encoded by oligonucleotides, (b) comprise a plurality of unique capture oligonucleotides, (c) have a range of diameters of (i) from 2 microns to 20 microns or (ii) from several hundred Angstroms up to 10 microns, wherein said beads are randomly positioned within the planar assembly, and wherein said planar assembly is located in a designated area on a substrate.

118. (Newly Added) The bead array of claim 117, wherein said capture oligonucleotides are capable of annealing to an at least partially complementary analyte.

119. (Newly Added) The bead array of claim 117, wherein the analyte is a cDNA derived from mRNA by reverse transcription.

120. (Newly Added) The bead array of claim 117, wherein the analyte is an amplicon derived from genomic DNA by amplification;

121. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said designated area comprises an area of predetermined shape and/or size.

122. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are assembled into an array of a predetermined geometry.

123. (Newly Added) The bead array of claim 122, wherein said predetermined geometry is hexagonal.

124. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are assembled into a plurality of designated areas.

125. (Newly Added) The bead array of claim 121, wherein said beads are assembled into a plurality of designated areas.

126. (Newly Added) The bead array of claim 122, wherein said beads are assembled into a plurality of designated areas.

127. (Newly Added) The bead array of claim 123, wherein said beads are assembled into a plurality of designated areas.

128. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said substrate is a silicon substrate.

129. (Newly Added) The bead array of claim 128, wherein said silicon substrate comprises a Si/SiO_x chip.

130. (Newly Added) The bead array of claim 128, wherein the designated area on said silicon substrate is defined by lithographic patterning.

131. (Newly Added) The bead array of claim 128, wherein the designated area on said silicon substrate is defined by chemical patterning.

132. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said planar assembly comprises a single layer of beads.

133. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are comprised of latex.

134. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are comprised of silica.

135. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are comprised of oxide particles.

136. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are comprised of polystyrene.

137. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are chemically encoded.

138. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said beads are oligonucleotide encoded.

139. (Newly Added) The bead array of any of claims 114-116 or 117, wherein said capture oligonucleotides are designed to hybridize to cDNA.

140. (Newly Added) The bead array of claim 114-116 or 117, wherein said beads have a diameter of about 2 microns.

141. (Newly Added) An array of arrays comprising an array of a plurality of bead arrays according to any of claims 114-116 or 117.

142. (Newly Added) The array of arrays according to claim 141, wherein said each of said bead arrays is in a separate designated area on a substrate.

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